A vacuum motor suitable for actuating a carburetor choke valve has primary and secondary stages responsive to separate vacuum signals. The secondary stage is carried by the primary stage and has a valve which opens upon full retraction of the primary stage to permit application of a vacuum signal to the secondary stage.

2 Claims, 3 Drawing Figures
TWO-STAGE VACUUM MOTOR

This invention relates to a two-stage vacuum motor which has a variety of potential applications and which is particularly suited for actuating a carburetor choke valve.

Numerous two-stage vacuum motors have been proposed heretofore; in general, however, use of a separate vacuum signal for each stage has required a complex structure having a separate vacuum responsive member for each stage. This invention provides a two-stage vacuum motor constructed to permit a single diaphragm to respond to two separate vacuum signals.

In a preferred embodiment, the two-stage vacuum motor comprises: a first diaphragm having a flexible stem carried by the outer primary stage portion of the vacuum motor; and a second diaphragm, the inner portion of which acts as a secondary stage and is carried by the outer primary stage portion. The secondary stage has a valve which opens upon full retraction of the primary stage to permit application of a vacuum signal to the secondary stage.

The details as well as other features and advantages of this invention are set forth in the following detailed description of the preferred embodiment and are shown in the drawing in which:

FIG. 1 is an axial sectional view of this two-stage vacuum motor;
FIG. 2 is an enlarged view, taken generally along line 2-2 of FIG. 1, showing the end of the valve which controls application of the vacuum signal to the secondary stage; and
FIG. 3 is a sectional view, taken along line 3-3 of FIG. 2, showing how the valve opens upon full retraction of the primary stage.

Referring first to FIG. 1, a two-stage vacuum motor comprises: a first diaphragm having a flexible stem carried by the outer primary stage portion of the vacuum motor; and a second diaphragm, the inner portion of which acts as a secondary stage and is carried by the outer primary stage portion. The secondary stage has a valve which opens upon full retraction of the primary stage to permit application of a vacuum signal to the secondary stage.

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from said rear inner housing, said rear outer housing also having a secondary fitting which registers with said opening when said valve flange is engaged with said rear housings for applying a vacuum signal to said secondary chamber effective to further retract said inner portion of said diaphragm and said stem against the bias of said inner spring.